

The Quality of Sleep and Quality of Life in Patients with Alopecia

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Abstract

Background and Objective: Alopecia is one of the most common skin disorders that can affect the quality of life (QOL) in patients. Since few studies have simultaneously evaluated the QOL and quality of sleep in patients with alopecia, this study aimed to evaluate these two important factors in patients with different types of hair loss and among demographic variables.

Materials and Methods: Using a convenience sampling method, this cross-sectional study was performed on all patients with various types of alopecia referring to the Dermatology Clinic of Rasoul-e-Akram Hospital, Tehran, Iran, in 2016. For data collection, Dermatology Life Quality Index (DLQI), Short Form Health Survey (SF-36), and Pittsburgh Sleep Quality Index (PSQI) questionnaires were used.

Results: A total of 70 patients with four types of hair loss, including androgenic alopecia, alopecia areata, telogen effluvium, and discoid lupus erythematosus (DLE) were evaluated. The overall sleep quality score was 5.51 ± 2.93 , which was not significantly different in all four patient groups ($P > 0.05$). The overall DLQI score was 4.40 ± 4.30 , which had little effect on the QOL in most patients with alopecia (40.6%). The overall QOL and quality of sleep scores were not significantly correlated with such demographic variables as age, gender, marital status, education, and employment ($P > 0.05$). The SF-36 questionnaire and DLQI had a significant inverse relationship ($r = -0.285$, $P = 0.026$).

Conclusion: Our study showed that the quality of sleep and QOL were affected in all four types of patients with alopecia. As a result, attention to quality of sleep and QOL in these patients with any demographic characteristics is important. However, more studies are needed to confirm the results.

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Introduction

Hair is an important component of one's identity and mental image (1). Alopecia is a dermatologic disease defined as hair loss on the scalp or other parts of the body. The disease is divided into two groups: scarring (also called cicatricial) and non-

scarring. In the scarring alopecia, there is usually severe inflammation around the main part of the hair follicle (bulge) causing destruction of the hair follicle typically and its replacement with fibrous tissue. As the result, this leads to irreversible hair loss in this type of alopecia. This destructive process can be induced by a fungal infection, chemicals, mechanical traction, and inflammatory disorders such as discoid lupus erythematosus (DLE), lichen planopilaris (LPP), dissecting cellulitis, tuft-

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ed folliculitis, folliculitis decalvans (FD), alopecia mucinosa, central centrifugal cicatricial alopecia (CCCA), and acne keloidalis.

In non-scarring alopecia, as its name implies, the hair loss process is reversible if the main pathology is resolved (except in the late stage of some of them). This type of alopecia includes male and female pattern hair loss (also known as androgenic alopecia), alopecia areata, telogen effluvium, senescent alopecia, and trichotillomania (TTM) (2).

Alopecia is often stressful and can affect the quality of life (QOL) (3). The Global Burden of Disease (GBD) study reported 15981000 alopecia areata cases in 2018, an annual incidence of 28185000, and 523000 years of life lost (4).

Previous studies have reported different findings on the association of hair loss with a variety of psychiatric disorders, including sleep disorder (5). Some reported higher anxiety and depression in these patients, and others reported that this comorbidity was not significant (6). Although hair loss is a benign disease, even mild types of the disease can damage self-esteem, mental image, and different aspects of a patient's QOL (7). The importance of QOL in patients is such that some studies have suggested it as a criterion for evaluating treatment response in patients with alopecia (8). Few studies have evaluated both sleep quality and QOL in patients with alopecia, and many published studies have targeted only a specific type of alopecia. Having information about the quality of sleep and QOL of these patients is essential and can play an important role in treatment. The aim of this study was to evaluate the quality of sleep and QOL in patients with different types of alopecia including androgenic alopecia, alopecia areata, telogen effluvium, and DLE in Dermatology Clinic of Rasoul-e-Akram Hospital, Tehran, Iran.

Materials and Methods

Using a convenience sampling method, this cross-sectional study was performed on all patients with various types of alopecia referring to the Dermatology Clinic of Rasoul-e-Akram Hospital from April to October 2016. Types of alopecia were clinically identified and classified by dermatologists. Patients with immunological disorders, a history of taking immunosuppressive drugs or hair loss medications, and patients with systemic disorders such as liver and kidney malignancies or psychologic and chronic diseases were excluded from the study.

Based on previous studies (9), considering the

average score of QOL in patients with alopecia (54.18) and assuming 0.05 confidence coefficient and 80% study power, the minimum sample size needed for the study was 70 patients.

The information about age, gender (man/woman), marital status (single/married), educational level (university degree/non-university education), job (employed/unemployed), and type of alopecia (androgenic alopecia, alopecia areata, telogen effluvium, and DLE) was collected using a research questionnaire. Age was classified into four categories (as 16-25, 26-30, 31-39, and 40-55 years).

Patients' QOL was assessed using Dermatology Life Quality Index (DLQI) and Short Form Health Survey (SF-36), and sleep quality was assessed using Pittsburgh Sleep Quality Index (PSQI).

The DLQI consists of 10 four-choice questions each scored from 0 to 3. The total score of the questionnaire (range: 0 to 30) indicates the QOL of patients with alopecia. A higher score indicates that alopecia has more significant effects on the QOL of the affected individual (8). The qualitative classification of DLQI score is as follows: 0 to 1: no impact, 2 to 5: low impact, 6 to 10: moderate impact, 11 to 20: high impact, and 21 to 30: very high impact on the affected individual's life. This questionnaire was translated into Persian in 2007 and its validity has been confirmed by Cronbach's alpha coefficient of 0.75 (10).

The SF-36 questionnaire consists of 36 questions in 8 subscales. The subscales of this questionnaire include physical functioning, role limitations due to physical health problems, role limitations due to personal or emotional problems, energy/fatigue, emotional well-being, social functioning, pain, and general health. Also, the integration of subscales yields two general subscales, namely physical health and mental health. In this questionnaire, a lower score indicates a lower QOL. The Persian version of this questionnaire was validated in 2005 on the Iranian population with Cronbach's alpha coefficients of subscales ranging from 0.77 to 0.90 (11).

The PSQI questionnaire consists of 19 questions, which are scored on a Likert scale from 0 to 3. The questionnaire consists of seven components: subjective sleep quality, sleep latency, sleep duration, habitual sleep efficiency, sleep disturbances, use of sleeping medication, and daytime dysfunction. These subscales are aggregated and scored from 0 to 21. A higher score indicates poor sleep quality. The sen-

sitivity and specificity of the Persian translation of this questionnaire in 2012 for cut-off point of 5 were 94% and 72%, respectively, and for cut-off point of 6, 85% and 84%, respectively (12).

Statistical analysis was performed using SPSS software (version 23, IBM Corporation, Armonk, NY, USA). Independent t-test and Mann-Whitney U test were used to compare quantitative variables in two independent groups and chi-square test was used to compare qualitative variables. Analysis of variance (ANOVA) was used to compare the mean score of quantitative variables in several groups. Pearson correlation was used to examine the correlation between DLQI, SF-36, and PSQI scores. Significance level was considered less than 0.05. This study was approved by the Research Ethics Committee of Iran University of Medical Sciences, Tehran (IUMS.FMD.REC 1396.8911215319).

Results

In this study, 70 patients with alopecia [40 (57.1%) women and 30 (42.9%) men] with the mean age of 32.74 ± 9.97 years were evaluated from April to October 2016. Out of these participants, 71.8% were married, 71.4% held a university degree, 51.8% were employed, and 48.2% were unemployed.

In terms of the type of hair loss, 31 (44.3%) had androgenic alopecia, 14 (20.0%) had alopecia areata, 13 (18.6%) had telogen effluvium, and 12 (17.1%) had DLE.

The overall sleep quality score was 5.51 ± 2.93 .

The mean and standard deviation (SD) of sleep quality components in the four groups of patients with alopecia are presented in table 1. As indicated in this table, there was no significant difference in the seven components of sleep quality between these four groups ($P > 0.05$).

The score of sleep quality among different categories of age ($P = 0.458$), gender ($P = 0.344$), educational status ($P = 0.900$), marital status ($P = 0.342$), and employment ($P = 0.840$) was not significantly different.

The mean and SD of the SF-36 QOL subscales are presented in table 2.

The relationship between the subscales of QOL and the variables of age, gender, educational status, marital status, and job was evaluated. The results showed that except for the relationship between general health and gender ($P = 0.006$), the subscale of pain and education ($P = 0.045$), and energy/fatigue ($P = 0.043$) and social function with marital status ($P = 0.014$), there was no significant correlation between other subscales and the mentioned variables.

The mean DLQI score in this study was 4.3 ± 4.4 . According to the questionnaire, alopecia had no significant effect on the QOL in 30.4%, low effect on 40.6%, moderate effect on 18.8%, and very high effect on 10.2% of the patients. DLQI scores were not significantly associated with age ($P = 0.238$), gender ($P = 0.366$), educational status ($P = 0.072$), marital status ($P = 0.301$), and employment ($P = 0.050$).

Table 1. Mean and standard deviation (SD) of sleep quality components score in four groups of patients with alopecia

		Telogen effluvium	Alopecia areata	Androgenic alopecia	DLE	P-value ^a
Subjective sleep quality	Mean \pm SD	1.08 \pm 0.86	1.31 \pm 0.85	1.03 \pm 0.66	0.83 \pm 0.58	0.441
	Minimum-maximum	0-2	0-3	0-2	0-2	
	Sample size	13	13	31	12	
Sleep latency	Mean \pm SD	1.25 \pm 0.87	1.43 \pm 1.09	1.12 \pm 0.91	0.83 \pm 0.72	0.410
	Minimum-maximum	0-3	0-3	0-3	0-2	
	Sample size	12	14	26	12	
Sleep duration	Mean \pm SD	1.36 \pm 1.12	0.92 \pm 0.95	1.07 \pm 0.87	1.17 \pm 0.94	0.703
	Minimum-maximum	0-3	0-3	0-3	0-3	
	Sample size	11	13	30	12	
Habitual sleep efficiency	Mean \pm SD	0.36 \pm 0.92	0.18 \pm 0.40	0.23 \pm 0.68	0.25 \pm 0.62	0.977
	Minimum-maximum	0-3	0-1	0-3	0-2	
	Sample size	11	11	30	12	
Sleep disturbances	Mean \pm SD	1.00 \pm 0.41	1.07 \pm 0.27	0.94 \pm 0.25	1.00 \pm 0.00	0.463
	Minimum-maximum	0-2	1-2	0-1	1-1	
	Sample size	13	14	31	12	
Use of sleeping medication	Mean \pm SD	0.54 \pm 1.05	0.50 \pm 0.94	0.19 \pm 0.65	0.33 \pm 0.78	0.444
	Minimum-maximum	0-3	0-3	0-3	0-2	
	Sample size	13	14	31	12	
Daytime dysfunction	Mean \pm SD	1.17 \pm 1.03	1.21 \pm 1.05	0.90 \pm 0.99	0.83 \pm 0.94	0.661
	Minimum-maximum	0-3	0-3	0-3	0-3	
	Sample size	12	14	30	12	

^aP-values are from analysis of variance (ANOVA) test

SD: Standard deviation; DLE: Discoid lupus erythematosus

Table 2. Score of subscales of quality of life (QOL) in patients with alopecia based on Short Form Health Survey (SF-36) questionnaire

SF-36	Sample size	Mean \pm SD	Minimum-maximum
Physical functioning	67	90.29 \pm 9.49	65-100
Role limitations due to physical health	67	76.49 \pm 22.56	25-100
Role limitations due to physical or emotional problems	68	53.43 \pm 33.15	0-100
Energy/fatigue	69	60.72 \pm 19.74	5-100
Emotional well-being	67	66.68 \pm 17.55	24-100
Social functioning	68	68.93 \pm 23.00	0-100
Body pain	66	83.37 \pm 13.60	55-100
General health	69	63.26 \pm 16.53	20-90

SD: Standard deviation

Spearman correlation test showed a significant inverse correlation between SF-36 and DLQI ($r = -0.285$, $P = 0.026$).

The bivariate correlation of SF-36, DLQI, and PSQI is presented in table 3.

Table 3. The bivariate correlation of quality of life (QOL) and quality of sleep in patients with alopecia

	DLQI	PSQI
SF-36	-0.285*	-0.565*
DLQI	1.000	0.138

*Significant correlation at level of 0.05

DLQI: Dermatology Life Quality Index; PSQI: Pittsburgh Sleep Quality Index; SF-36: Short Form Health Survey

Discussion

This was a descriptive study exploring the QOL and sleep quality of patients with different types of alopecia regarding type of alopecia and demographic variables. The DLQI score in this study indicated that alopecia had a low effect on the QOL of patients. In a different study, Zhang and Zhang evaluated patients with alopecia areata and androgenic alopecia and reported the DLQI score as 6.3 ± 6.3 (8). Cartwright et al.'s study on 300 patients with severe alopecia areata reported DLQI score as 13.5 (13). In addition, Qi et al. studied 698 patients with alopecia areata and reported the score of 5.8 ± 5.6 (14). It seems that different DLQI scores are due to the difference in the characteristics of the population under study, the type of alopecia, and the severity of alopecia in the studied samples.

The QOL in patients with alopecia areata was evaluated in various studies with different questionnaires (9, 15, 16). Similar to our study, none of these studies reported a significant difference among different age groups. The study conducted by Bade et al. showed that the mean DLQI score was significantly higher in younger people than in older ones (17). Also, in the study by Zhang and Zhang, subjects under 30 years of age had signifi-

cantly higher DLQI scores than those aged 30 and older. According to these studies, alopecia appears to have a greater impact on the QOL in younger people because they are more active in the society to earn a living (8). The discrepancy in the findings is probably due to low number of samples in our study and similar studies that have considered the effect of age on the QOL.

Although a review study showed that the psychological effects of alopecia on women were greater than men (7) - which might be justified by the greater importance of beauty in women - the mean DLQI score in the study by Zhang and Zhang was not significantly different between men and women (8). Moreover, the studies by Baghestani and Mazloomi (9) and Jankovic et al. (16) revealed that there was no correlation between gender and QOL in patients with alopecia areata. The type of clothing among Iranian women and hijab that covers the affected area can also partly explain the lack of significant differences between the genders in our study (9).

Regarding the SF-36 questionnaire, marital status only affected the two subscales of energy/fatigue and social functioning of patients; so, the QOL in married people was better than unmarried ones. This demonstrates that the psychophysiological distress of hair loss has more effect on unmarried people and makes them worry about their life and future. Also, the QOL in the group with academic education was better than the group with non-academic education. The subscale of general health in men was better than women. Hair and identity have a great connection, especially in women. It can also be claimed that women's self-esteem is more dependent on physical appearance than men. These results are consistent with some similar studies conducted in Iran and other countries (18-21).

Sleep quality score based on PSQI indicated a poor sleep quality in all subjects. In addition, the

PSQI score and its seven components were not significantly different among the four alopecia groups. However, in a study conducted in Japan on 105 sleep-disordered patients with alopecia areata using the Epworth Sleepiness Scale (ESS), it was reported that only 11.0% of patients suffered from daytime sleepiness and the mean ESS score of patients was not significantly different from the normal population (22). Overall, our findings suggest an association between sleep disturbance and all four types of hair loss; this might indicate the nature of this disease or effects of psychiatric disorder due to hair loss on their sleep. As far as the researchers of this study investigated, no study has yet compared the seven components of the PSQI between the groups of alopecia and there is no study on the effect of demographic variables on sleep quality of people with alopecia.

The main strength of this study is that it simultaneously evaluated QOL and sleep quality in four groups of patients with alopecia. Also, the main limitations of this study include the small sample size and evaluation of patients in a clinic with a confined reference population. Further studies are needed to approve the results, especially in respect to alopecia and sleep.

Conclusion

The results of our study indicated that QOL and sleep quality in patients with different types of alopecia, including telogen effluvium, alopecia areata, androgenic alopecia, and DLE were not significantly different in terms of such demographic variables as age, gender, marital status, education, and employment. As a result, attention to quality of sleep and QOL in these patients with any demographic characteristics is important. However, more studies are needed to confirm these findings.

Conflict of Interests

Authors have no conflict of interests.

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